

Project Initialization and Planning Phase

Date	11 June 2025
Team ID	SWTID1749627644
Project Title	Human Resource Management: Predicting Employee Promotions using Machine Learning
Maximum Marks	3 Marks

Project Proposal (Proposed Solution):

To address the challenges in identifying eligible employees for promotion, this project proposes the development of a machine learning-based prediction model that analyzes various employee attributes such as performance ratings, training scores, tenure, awards, and more. By leveraging classification algorithms, the system will learn patterns from historical promotion data and accurately forecast promotion potential for current employees. This data-driven solution will assist HR teams in making objective, consistent, and fair promotion decisions at scale. It aims to streamline talent management, reduce human bias, and ultimately enhance employee satisfaction and organizational efficiency.

Project Overview	
Objective	The primary objective is to improve the employee promotion process by implementing machine learning techniques to ensure data-driven, fair, and timely promotion decisions within an organization.
Scope	This project focuses on analyzing employee performance and related attributes to build a predictive model that supports HR teams in identifying high-potential employees for promotion, thereby enhancing workforce management.
Problem Statement	
Description	Current promotion decisions often rely on manual assessments, which can be inconsistent, biased, and inefficient which leads to overlooked talent and reduced employee morale.
Impact	Addressing these challenges will enable fairer and more accurate promotion evaluations, boosting employee engagement, improving retention, and supporting organizational growth through better leadership development.

Proposed Solution	
Approach	Leveraging machine learning algorithms to predict employee promotability based on historical data, performance metrics, and relevant features, providing HR with a transparent and scalable decision-support tool.
Key Features	<ul style="list-style-type: none"> • Development of a machine learning-based employee promotion prediction model • Objective, data-driven insights to guide promotion decisions • Scalable and adaptable system that evolves with workforce trends and performance dynamics

Resource Requirements

Resource Type	Description	Specification/Allocation
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	T4 GPU, Multi-Core CPU
Memory	RAM specifications	8GB RAM
Storage	Disk space for data, models, and logs	256GB SSD
Software		
Frameworks	Python frameworks	Flask
Libraries	Additional libraries	scikit-learn, pandas, numpy, matplotlib, seaborn
Development Environment	IDE, version control	Jupyter Notebook, Git, PyCharm
Data		
Data	Source, size, format	Kaggle dataset, 50,000+ rows, CSV